

No.

8500019



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Nickerson American Plant Breeders, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (AT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Dart'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 30th day of April in the year of our Lord one thousand nine hundred and eighty-seven.

Attest:

*Kenneth H. Evans*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Richard E. Lyng*  
Secretary of Agriculture



1882





# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

|   |  |  |  |   |  |
|---|--|--|--|---|--|
| 1. NAME OF APPLICANT(S)<br>Nickerson American Plant Breeders, Inc.  |  | 2. TEMPORARY DESIGNATION<br>NAPB 22          |  | 3. VARIETY NAME<br>Dart   |  |
| 4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code)<br>5201 Johnson Drive<br>P.O. Box 2955<br>Shawnee Mission, KS 66201  |  | 5. PHONE (Include area code)<br>913-384-4940 |  | FOR OFFICIAL USE ONLY<br>PVPO NUMBER<br>8500019   |  |
| 6. GENUS AND SPECIES NAME<br><u>Medicago sativa</u>   |  | 7. FAMILY NAME (Botanical)<br>Leguminosae    |  | FILING<br>DATE 10/22/84<br>TIME 2:30 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.           |  |
| 8. KIND NAME<br>Alfalfa   |  | 9. DATE OF DETERMINATION<br>January 1983     |  | FEE RECEIVED<br>AMOUNT FOR FILING \$ 1,800<br>DATE 10/22/84<br>AMOUNT FOR CERTIFICATE \$ 200.00<br>DATE April 2, 1987 |  |
| 10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.)<br>Corporation  |  |  |  | 12. DATE OF INCORPORATION   |  |
| 11. IF INCORPORATED, GIVE STATE OF INCORPORATION<br>Delaware  |  |  |  |   |  |
| 13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS<br>Giles Dixon, NAPB, 5201 Johnson Drive (P.O. Box 2955), Shawnee Mission, KS 66201<br>Jim B. Moutray, AgriPro, R. R. #3, Ames, IA 50010 |  |  |  |   |  |

## 14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

- a. ☒ Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- b. ☒ Exhibit B, Novelty Statement
- c. ☒ Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- d. ☐ Exhibit D, Additional Description of the Variety

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.)

☐ Yes (If "Yes," answer items 16 and 17 below) ☒ No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?

☒ Yes ☐ No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?

☒ Foundation ☐ Registered ☒ Certified

18. DID THE APPLICANT(S) FILE FOR PROTECTION OF THE VARIETY IN THE U.S. OR OTHER COUNTRIES?

☐ Yes (If "Yes," give names of countries and dates) ☒ No

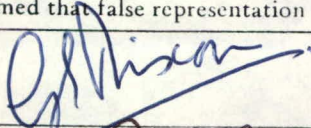
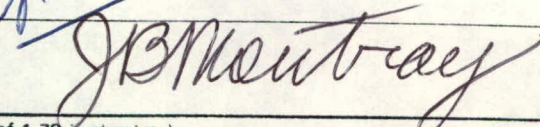
19. HAVE RIGHTS BEEN GRANTED IN THE U.S. OR OTHER COUNTRIES?

☐ Yes (If "Yes," give names of countries and dates) ☒ No

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

|   |                      |
|---|----------------------|
| SIGNATURE OF APPLICANT<br> | DATE<br>Oct 8, 1984  |
| SIGNATURE OF APPLICANT<br> | DATE<br>Oct. 4, 1984 |

8200011





## Exhibit A

## Origin and Breeding History of the Variety 'Dart'

Dart alfalfa is a 117-clone synthetic developed from a base of northern hardy and Flemish populations. These populations had undergone previous selection for winter survival, forage yield, resistance to Phytophthora root rot, anthracnose, bacterial wilt and Fusarium wilt at Ames, Iowa. Populations were then subjected to three or four cycles of field selection for resistance to Verticillium wilt. Final selections were taken from the Livingston, Wisconsin, space plant nursery based on vigor, winter survival, leafhopper resistance and freedom from common leafspot and downy mildew.

Parentage traces predominately to 'Apollo', 'Apollo II', 'Endure', 'Saranac AR', 'Atlas', 'Anchor', and 'WL 318'.

Breeder seed was produced on cuttings of the 117 parent clones near Nampa, Idaho.

During seed multiplication, no variants beyond the limits defined in Exhibit C have been found, and multiplication procedures will ensure that seed being sold as Dart will not be shifted in characteristics beyond presently acceptable limits for alfalfa varieties.

It is also confirmed that Dart meets presently acceptable levels of uniformity for alfalfa varieties.



8200118





Added 2-17-87, AB

EXHIBIT B

Amended 2/3/87

Novelty Statement

'Dart'

'Dart' most closely resembles the variety 'Endure'. 'Dart' differs from 'Endure' in reaction to Phytophthora root rot. 'Dart' rates high resistance (62% resistance for three-year average, Univ. Minnesota tests) while 'Endure' rates moderate resistance (28% resistance for three-year average, Univ. Minnesota tests).







U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
LIVESTOCK, MEAT, GRAIN & SEED DIVISION  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MARYLAND 20705

EXHIBIT C  
(Alfalfa)

OBJECTIVE DESCRIPTION OF VARIETY  
ALFALFA (*Medicago sativa* sensu Gunn et al.)

|  |                                  |   |
|--|----------------------------------|---|
| NAME OF APPLICANT(S)<br>Nickerson American Plant Breeders  | TEMPORARY DESIGNATION<br>NAPB 22 | VARIETY NAME<br>Dart                            |
| ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code)<br>5201 Johnson Drive, P.O. Box 2955<br>Shawnee Mission, KS 66201 |                                  | FOR OFFICIAL USE ONLY<br>PVPO NUMBER<br>8500019 |

PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place numbers in the boxes to designate the expressions which are characteristic of the commercial generations of the application variety. Data for quantitative plant characters should be based on a minimum of 100 plants. Include leading zeros when necessary (e.g., 0 8 9) for quantitative data. Comparative data should be determined from varieties entered in the same trial. Plant color may be precisely designated by using any recognized color chart, e.g., The Munsell Plant Tissue Color Charts.

1. WINTERHARDINESS: AB, 1-15-87 2-17-87

78 ☒ CLASS:

- |  |                                      |
|--|--------------------------------------|
| 1 = Very Non-Winterhardy (CUF 101)           | 2 = Non-Winterhardy (Moapa 69)       |
| 3 = Intermediately Non-Winterhardy (Mesilla) | 4 = Semi-Winterhardy (Lahontan)      |
| 5 = (Du Puits)                               | 6 = Moderately Winterhardy (Saranac) |
| 7 = (Ranger)                                 | 8 = Winterhardy (Vernal)             |
| 9 = Extremely Winterhardy (Norseman)         |                                      |

TEST LOCATION: Ames, Iowa

2. FALL DORMANCY:

FALL DORMANCY (DETERMINED FROM SPACED PLANTINGS)

| TESTING INSTITUTION<br>AND LOCATION | DATE OF<br>LAST CUT | DATE REGROWTH<br>SCORED | REGROWTH SCORE OR AVERAGE HEIGHT |                  |         |        | LSD .05 |
|-------------------------------------|---------------------|-------------------------|----------------------------------|------------------|---------|--------|---------|
|                                     |                     |                         | APPLICATION<br>VARIETY           | CHECK VARIETIES* |         |        |         |
|                                     |                     |                         |                                  | Ranger           | Saranac | Vernal |         |
| Univ. MN,<br>St. Paul, MN           | 09-09-83            | 10-12-83                | 6.64                             | 6.50             | 6.37    | 7.42   | 0.61    |

\* CUF 101, Moapa 69, Mesilla, Lahontan, Du Puits, Saranac, Ranger, Vernal, or Norseman as appropriate.

Specify scoring system used: Scored 0-9; 0=18" or higher, 1=16"-18", 2=14"-16", 3=12"-14", 4=10"-12",  
5=8"-10", 6=6"-8", 8=2"-4", 9=0"-2"

5 ☒

Fall Growth Habit (Determined from Fall Dormancy Trials)

- |                            |                          |                            |
|----------------------------|--------------------------|----------------------------|
| 1 = Erect (CUF 101)        | 3 = Semierect (Mesilla)  | 5 = Intermediate (Saranac) |
| 7 = Semidecumbent (Vernal) | 9 = Decumbent (Norseman) |                            |

AB, 1-15-87

3. RECOVERY AFTER FIRST SPRING CUT (In Southwest, first cut after March 21):

☒ 3

- |                          |                    |                           |                   |
|--------------------------|--------------------|---------------------------|-------------------|
| 1 = Very Fast (CUF 101)  | 3 = Fast (Saranac) | 5 = Intermediate (Ranger) | 7 = Slow (Vernal) |
| 9 = Very Slow (Norseman) |                    |                           |                   |

TEST LOCATION: Ames, Iowa

4. AREAS OF ADAPTATION IN U.S. (Where tested and proven adapted):

☒ 1

Primary Area of Adaptation

☒ 2

☒ 6

Other Areas of Adaptation

- |  |                               |                  |               |
|--|-------------------------------|------------------|---------------|
| 1 = North Central                        | 2 = East Central              | 3 = Southeast    | 4 = Southwest |
| 5 = Moderately Winterhardy Intermountain | 6 = Winterhardy Intermountain | 7 = Great Plains |               |
| 8 = Other (Specify) _____                |                               |                  |               |



5. FLOWERING DATE (When 10% of plants possess open flowers at time of first spring cut):

Days Earlier Than

Same As

1 = CUF 101

2 = Mesilla

3 = Saranac

4 = Vernal

5 = Norseman

Days Later Than

TEST LOCATION: \_\_\_\_\_

4



## 6. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary):



1 = Very Dark Green (524)

2 = Dark Green (Vernal)

3 = Light Green (Ranger)

COLOR CHART VALUE (Specify chart used; \_\_\_\_\_):

APPLICATION VARIETY: \_\_\_\_\_

VERNAL: \_\_\_\_\_

TEST LOCATION: \_\_\_\_\_

## 7. CROWN TYPE (Determined from spaced plantings):



Noncreeping Types:

1 = Broad (Vernal)

2 = Intermediate (Saranac)

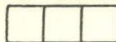
3 = Narrow (CUF 101)

Creeping Types:

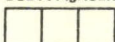
4 = Creeping Rooted (Rangelander)

5 = Rhizomatous (Rhizoma)

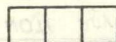
## 8. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):



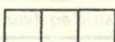
% Purple and Violet (Subclasses 1.1 to 1.4)



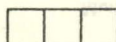
% Blue (Subclasses 2.3 and 2.4)



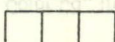
% Variegated Other Than Blue (Subclasses 2.1, 2.2, 2.5 to 2.9)



% Yellow (Subclasses 4.1 to 4.4)



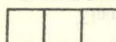
% Cream (Class 3)



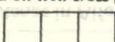
% White (Class 5)

TEST LOCATION: \_\_\_\_\_

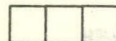
## 9. POD SHAPE (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes):



% Tightly Coiled (One or more coils, center more or less closed)



% Loosely Coiled (One or more coils, center conspicuously open)



% Sickle (Less than 1 coil)

TEST LOCATION: \_\_\_\_\_

10. PEST RESISTANCE: Provide in the appropriate column, trial data for application variety, and resistant (R) and susceptible (S) check varieties, synthetic generation tested, average severity index scores (ASI), least significant difference statistics (LSD .05), the institution in charge of test, year, and location of test, and whether test is a field or laboratory evaluation. Describe scoring system, and any test procedure which differs from standard methods proposed by Elgin (1982). Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D.

Seeds of the check varieties and germplasm lines listed below can be obtained from the USDA Field Crops Laboratory, Bldg. 001, Rm. 335, BARC-West, Beltsville, MD 20705. Although comparisons with check varieties listed below are preferred, comparisons with any appropriate check variety recommended by Elgin (1982) may be presented.

| A. DISEASE RESISTANCE:                                     | DISEASE   | VARIETY | SYN. GEN. TESTED | PERCENT RESISTANT PLANTS | NUMBER OF PLANTS TESTED | ASI  | ASI LSD .05 | INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY |
|--|---|---------|------------------|--------------------------|-------------------------|------|-------------|--|
| Anthracnose, Race 1<br>( <i>Colletotrichum trifolii</i> )  | Application   |         | 1                | 39.1                     | over 250                | --   | LSD .05     | NAPB, Ames, Iowa<br>1983 Lab.                    |
|  | Arc (R)   |         |                  | 71.9                     | over 250                | --   | % res.      |  |
|  | Saranac (S)   |         |                  | 0.5                      | over 250                | --   | 8.0         |  |
|  | SCORING SYSTEM: Plants scored 1&2 (on a 1-5 scale, where 1=no disease and 5=dead plant) considered resistant  |         |                  |                          |                         |      |             |  |
| Anthracnose, Race 2<br>( <i>Collectotrichum trifolii</i> ) | Application   |         |                  |                          |                         |      |             |  |
|  | Saranac AR (R)  |         |                  |                          |                         |      |             |  |
|  | Arc (S)   |         |                  |                          |                         |      |             |  |
|  | SCORING SYSTEM:   |         |                  |                          |                         |      |             |  |
| Bacterial Wilt<br>( <i>Corynebacterium insidiosum</i> )    | Application   |         | 1                | 40.18                    | 225                     | 1.93 | 0.34        | Univ. MN, St. Paul, MN 1983<br>Field             |
|  | Vernal (R)  |         |                  | 24.66                    | 225                     | 2.39 |             |  |
|  | Narragansett (S)  |         |                  | 4.56                     | 225                     | 3.30 |             |  |
|  | SCORING SYSTEM: plants scored 0&1 (on a 0-5 scale, where 0=no disease, and 5=dead plant) considered resistant |         |                  |                          |                         |      |             |  |
| Common Leafspot<br>( <i>Pseudopeziza medicaginis</i> )     | Application   |         |                  |                          |                         |      |             |  |
|  | MSA-CW3AN3 (R)  |         |                  |                          |                         |      |             |  |
|  | Ranger (S)  |         |                  |                          |                         |      |             |  |
|  | SCORING SYSTEM:   |         |                  |                          |                         |      |             |  |



*a deleted substituted as per Nov. 27, 1985 letter from J. Mowbray. AB*

## 6. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary):

☐ 1 = Very Dark Green (524)      2 = Dark Green (Vernal)      3 = Light Green (Ranger)

COLOR CHART VALUE (Specify chart used; \_\_\_\_\_): \_\_\_\_\_

APPLICATION VARIETY: \_\_\_\_\_

VERNAL: \_\_\_\_\_

TEST LOCATION: \_\_\_\_\_

## 7. CROWN TYPE (Determined from spaced plantings):

☐ Noncreeping Types:      1 = Broad (Vernal)      2 = Intermediate (Saranac)      3 = Narrow (CUF 101)

Creeping Types:      4 = Creeping Rooted (Rangelander)      5 = Rhizomatous (Rhizoma)

## 8. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):

% Purple and Violet (Subclasses 1.1 to 1.4)         % Blue (Subclasses 2.3 and 2.4)

% Variegated Other Than Blue (Subclasses 2.1, 2.2, 2.5 to 2.9)         % Yellow (Subclasses 4.1 to 4.4)

% Cream (Class 3)         % White (Class 5)

TEST LOCATION: Ames, IA

## 9. POD SHAPE (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes):

% Tightly Coiled (One or more coils, center more or less closed)         % Loosely Coiled (One or more coils, center conspicuously open)

% Sickle (Less than 1 coil)      TEST LOCATION: \_\_\_\_\_

10. PEST RESISTANCE: Provide in the appropriate column, trial data for application variety, and resistant (R) and susceptible (S) check varieties, synthetic generation tested, average severity index scores (ASI), least significant difference statistics (LSD .05), the institution in charge of test, year, and location of test, and whether test is a field or laboratory evaluation. Describe scoring system, and any test procedure which differs from standard methods proposed by Elgin (1982). Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D. Seeds of the check varieties and germplasm lines listed below can be obtained from the USDA Field Crops Laboratory, Bldg. 001, Rm. 335, BARC-West, Beltsville, MD 20705. Although comparisons with check varieties listed below are preferred, comparisons with any appropriate check variety recommended by Elgin (1982) may be presented.

| A. DISEASE RESISTANCE:                                    | DISEASE          | VARIETY | SYN. GEN. TESTED | PERCENT RESISTANT PLANTS | NUMBER OF PLANTS TESTED | ASI | ASI LSD .05 | INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY |
|---|------------------|---------|------------------|--------------------------|-------------------------|-----|-------------|--|
| Anthracnose, Race 1<br>( <i>Colletotrichum trifolii</i> ) | Application      |         |                  |                          |                         |     |             |  |
|   | Arc (R)          |         |                  |                          |                         |     |             |  |
|   | Saranac (S)      |         |                  |                          |                         |     |             |  |
|   | SCORING SYSTEM:  |         |                  |                          |                         |     |             |  |
| Anthracnose, Race 2<br>( <i>Colletotrichum trifolii</i> ) | Application      |         |                  |                          |                         |     |             |  |
|   | Saranac AR (R)   |         |                  |                          |                         |     |             |  |
|   | Arc (S)          |         |                  |                          |                         |     |             |  |
|   | SCORING SYSTEM:  |         |                  |                          |                         |     |             |  |
| Bacterial Wilt<br>( <i>Corynebacterium insidiosum</i> )   | Application      |         |                  |                          |                         |     |             |  |
|   | Vernal (R)       |         |                  |                          |                         |     |             |  |
|   | Narragansett (S) |         |                  |                          |                         |     |             |  |
|   | SCORING SYSTEM:  |         |                  |                          |                         |     |             |  |
| Common Leafspot<br>( <i>Pseudopeziza medicaginis</i> )    | Application      |         |                  |                          |                         |     |             |  |
|   | MSA-CW3AN3 (R)   |         |                  |                          |                         |     |             |  |
|   | Ranger (S)       |         |                  |                          |                         |     |             |  |
|   | SCORING SYSTEM:  |         |                  |                          |                         |     |             |  |



Rec'd.  
12-3-85

## 10. B. INSECT RESISTANCE (Continued):

| INSECT   | VARIETY         | SYN. GEN. TESTED | PERCENT SEEDLING SURVIVAL | NUMBER OF SEEDLINGS TESTED | ASI | ASI LSD .05 | INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY |
|--|-----------------|------------------|---------------------------|----------------------------|-----|-------------|--|
| Blue Alfalfa Aphid<br>( <i>Acyrtosiphon kondoi</i> )                               | Application     |                  |                           |                            |     |             |  |
|  | CUF 101 (R)     |                  |                           |                            |     |             |  |
|  | PA-1 (S)        |                  |                           |                            |     |             |  |
|  | SCORING SYSTEM: |                  |                           |                            |     |             |  |
| Pea Aphid<br>( <i>Acyrtosiphon pism</i> )  | Application     |                  |                           |                            |     |             |  |
|  | Kanza (R)       |                  |                           |                            |     |             |  |
|  | Ranger (S)      |                  |                           |                            |     |             |  |
|  | SCORING SYSTEM: |                  |                           |                            |     |             |  |
| Spotted Alfalfa Aphid<br>( <i>Therioaphis maculata</i> )<br><br>Biotype, if known: | Application     |                  |                           |                            |     |             |  |
|  | Kanza (R)       |                  |                           |                            |     |             |  |
|  | Ranger (S)      |                  |                           |                            |     |             |  |
|  | SCORING SYSTEM: |                  |                           |                            |     |             |  |

| INSECT   | VARIETY   | SYN. GEN. TESTED | PERCENT RESISTANT PLANTS | NUMBER OF PLANTS TESTED | ASI  | ASI LSD .05 | INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY |
|--|---|------------------|--------------------------|-------------------------|------|-------------|--|
| Potato Leafhopper Yellowing<br>( <i>Empoasca fabae</i> ) | Application   | 2                | 22.83                    | over 200                | 3.54 |             | AgriPro  |
|  | MSA-CW3An3 (R)  |                  | 71.01                    | over 200                | 1.99 | 0.43        | Ames, IA   |
|  | Ranger (S)  |                  | 3.30                     | over 200                | 4.58 |             |  |
|  | SCORING SYSTEM: Scores 1 & 2 (on a scale of 1-9 where 1=no yellowing and 9=100% yellowing) considered resistant |                  |                          |                         |      |             |  |
| Other (Specify)  | Application   |                  |                          |                         |      |             |  |
|  | (R)   |                  |                          |                         |      |             |  |
|  | (S)   |                  |                          |                         |      |             |  |
|  | SCORING SYSTEM:   |                  |                          |                         |      |             |  |

## C. NEMATODE RESISTANCE:

| NEMATODE   | VARIETY          | SYN. GEN. TESTED | PERCENT RESISTANT PLANTS | NUMBER OF PLANTS TESTED | ASI | ASI LSD .05 | INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY |
|--|------------------|------------------|--------------------------|-------------------------|-----|-------------|--|
| Northern Root Knot<br>( <i>Meloidogyne hapla</i> ) | Application      |                  |                          |                         |     |             |  |
|  | Nev. Syn. XX (R) |                  |                          |                         |     |             |  |
|  | Lahontan (S)     |                  |                          |                         |     |             |  |
|  | SCORING SYSTEM:  |                  |                          |                         |     |             |  |





Exhibit E

Statement of ownership of the alfalfa variety

'Dart'

Nickerson American Plant Breeders Incorporated is the applicant for protection in this case being;

(A) The incorporated business (registered in Delaware) for and within which regular employees have bred and named this variety.

(B) The proprietary owner and intending commercial user of this variety.



RECEIVED

FEB 20 1986

U. S. DEPARTMENT



OF AGRICULTURE

AMS

PVPO

BILL OF SALE AND ASSIGNMENT

KNOW ALL MEN BY THESE PRESENTS that AGRIPRO BIOSCIENCES INC., a Delaware corporation (hereinafter referred to as "Seller"), pursuant to that certain Asset Purchase Agreement of even date herewith by and between Seller and AGR ACQUISITION CORPORATION, a Delaware corporation (hereinafter referred to as "Buyer") and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, does hereby grant, bargain, sell, assign, convey and deliver unto Buyer, all of Seller's right, title and interest in and to the plant varieties owned/registered by Seller and more particularly set forth on Exhibit A attached hereto for which PVP Certificates have been issued by or may be pending before the U. S. Department of Agriculture.

TO HAVE AND TO HOLD UNTO PURCHASER, its successors and assigns forever.

IN WITNESS WHEREOF, Seller has executed this Bill of Sale and Assignment as of the 30th day of June, 1994.

AGRIPRO BIOSCIENCES INC.

BY: W.A. Zama  
Title: President

STATE OF KANSAS, COUNTY OF JOHNSON

Before me, the undersigned, a Notary Public of the State and County aforesaid, personally appeared W.A. ZAMA with whom I am personally acquainted (or proved to me on the basis of satisfactory evidence) and who, upon oath, acknowledged himself to be the PRESIDENT of Agripro Biosciences Inc., the within named bargainer, a corporation, and that he as such PRESIDENT, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself as PRESIDENT.

WITNESS my hand and Notarial Seal at office the day and year above written.

Alma M. Weaver  
Notary Public

My Commission Expires:

June 22, 1998

ALMA M. WEAVER  
NOTARY PUBLIC  
STATE OF KANSAS

My Appt. Exp. June 22, 1998





Office of the Secretary of State

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I, EDWARD J. FREEL, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY THE ATTACHED IS A TRUE AND CORRECT COPY OF THE CERTIFICATE OF AMENDMENT OF "AGR ACQUISITION CORPORATION", CHANGING ITS NAME FROM "AGR ACQUISITION CORPORATION" TO "AGRIPRO SEEDS, INC.", FILED IN THIS OFFICE ON THE THIRTIETH DAY OF JUNE, A.D. 1994, AT 4:30 O'CLOCK P.M.

A CERTIFIED COPY OF THIS CERTIFICATE HAS BEEN FORWARDED TO THE NEW CASTLE COUNTY RECORDER OF DEEDS FOR RECORDING.



*Edward J. Freel*

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SECRETARY OF STATE  
AUTHENTICATION:

7169071

DATE:

07-01-94

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ABI SHAWNEE MSN

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CERTIFICATE OF AMENDMENT  
OF  
CERTIFICATE OF INCORPORATION  
OF  
AGR ACQUISITION CORPORATION

AGR Acquisition Corporation, a corporation organized and existing under and by virtue of the General Corporation Law of the State of Delaware,

DOES HEREBY CERTIFY:

FIRST: that the Board of Directors of said corporation, by the unanimous written consent of its members filed with the minutes of the Board, adopted a resolution proposing and declaring advisable the following amendment to the Certificate of Incorporation of said corporation:

RESOLVED, that the Certificate of Incorporation of this corporation be amended by changing the Article thereof numbered "ARTICLE I" so that, as amended, said Article shall be and read as follows:

"ARTICLE I

Name

The name of the corporation (hereinafter called the 'Corporation') is Agripro Seeds, Inc."

SECOND: That in lieu of a meeting and vote of stockholders, the sole shareholder of the corporation has given unanimous written consent to said amendment in accordance with the provisions of Section 228 of the General Corporation Law of the State of Delaware.

THIRD: That the aforesaid amendment was duly adopted in accordance with the applicable provisions of Sections 242 and 228 of the General Corporation Law of the State of Delaware.

FOURTH: That the capital of said corporation shall not be reduced under or by reason of said amendment.

IN WITNESS WHEREOF, said AGR Acquisition Corporation has caused this certificate to be signed by Gary T. Hancock, its President, and attested by Ann Steelman, its Secretary, this 30<sup>th</sup> day of June, 1994.

AGR ACQUISITION CORPORATION

BY: Gary T. Hancock  
Gary T. Hancock, President

ATTEST:

BY: Ann Steelman  
Ann Steelman, Secretary



